NORTHROP GRUMMAN

Electronic Sensors and Systems Sector

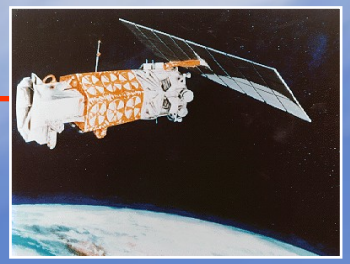
NORTHROP GRUMMAN

Discussion Agenda

- Northrop Grumman ESSS Overview
- ESSS ERP Organization and Team Structure
- ESSS ERP Implementation Strategy and Methodology
- Sample Project Approach
- Lessons learned
- Summary

Electronic Sensors and Systems Sector

- ≈ 13,300 employees
- 24 operating locations
- 17 international offices
- > 30% international
- > 200 key programs
- > 4,500 active contracts

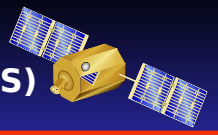


From Undersea to Outerspace

NORTHROP GRUMMAN

ES³ ... On Key Platforms

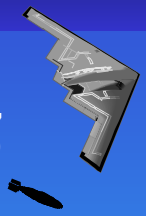
Satellites
(Sensors, SBIRS)



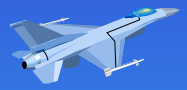
Joint STARS
(APY-3)

AWACS
(APY-1/2)

B-1B
(APQ-164)



B-2
(NAS, GAM)



F-16
(APG-66/68 & ALQ-131, LITENING II)

F-15
(ALQ-162, ALQ-135)

F-18
(ALQ-165 ALQ-162)

F-22
(APG-77)

Wedgetail

Apache
(Longbow, ALQ-162)

Predator
(TESAR)

BAT

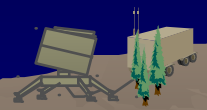
C-130
(ALQ-162, AAQ-24, APN-241)

ARL
(COMINT, MTI, SAR, IMINT)

Service Helicopters
(AAQ-24, ALQ-162)

Comanche
(Processors)

VIS



ADS / ATC / Firefinder

CVN
(Generators)

Information Fusion
(ETRAC, MANIFEST)

Seawolf
(Power & Propulsion)

DDG
(Radars & Anti-torpedo)

ASDS
(Underwater Vehicles)

Trident
(Power & Launchers)

NORTHROP GRUMMAN

XPCP-ES³ExtShow.5D

Our Processes Are Certified ...

Lloyd's Register
Quality Assurance

CERTIFICATE OF APPROVAL

This is to Certify that the Quality Management System of:

Northrop Grumman Corporation
Electronic Sensors and Systems Division
Baltimore, Maryland, USA

has been approved by Lloyd's Register Quality Assurance
Limited to the following Quality Management System Standards:

ISO 9001:1994, EN ISO 9001:1994, ANSI/ASQC Q9001-1994

The Quality Management System is applicable to:

Design and Manufacture of Electronic Systems, Sub-Systems, Integrated Circuits and Associated Software in Accordance with TickIT. Management of Field Engineering and Services Including Installation, Repairs and In-House Servicing of Electronic Systems and Sub-Systems.

Approval Certificate No: 70N693
Original Approval: August 31, 1994
Current Certificate: April 10, 1996

on behalf of LRQA

ISO 9001
1994

Boeing Preferred Supplier
Silver Award
1999

Boeing Seattle
D1-9000
1995

Lockheed
Martin SPC
1991

British Aerospace Military Aircraft

Preferred Supplier Process
Business Assessment Award

Northrop Grumman - Electronic Sensors and Systems Division

have achieved a rating which puts them in the

SILVER

category for the Business Assessment part of
BAe (MA) Preferred Supplier Process

British Aerospace
Preferred Supplier
1997

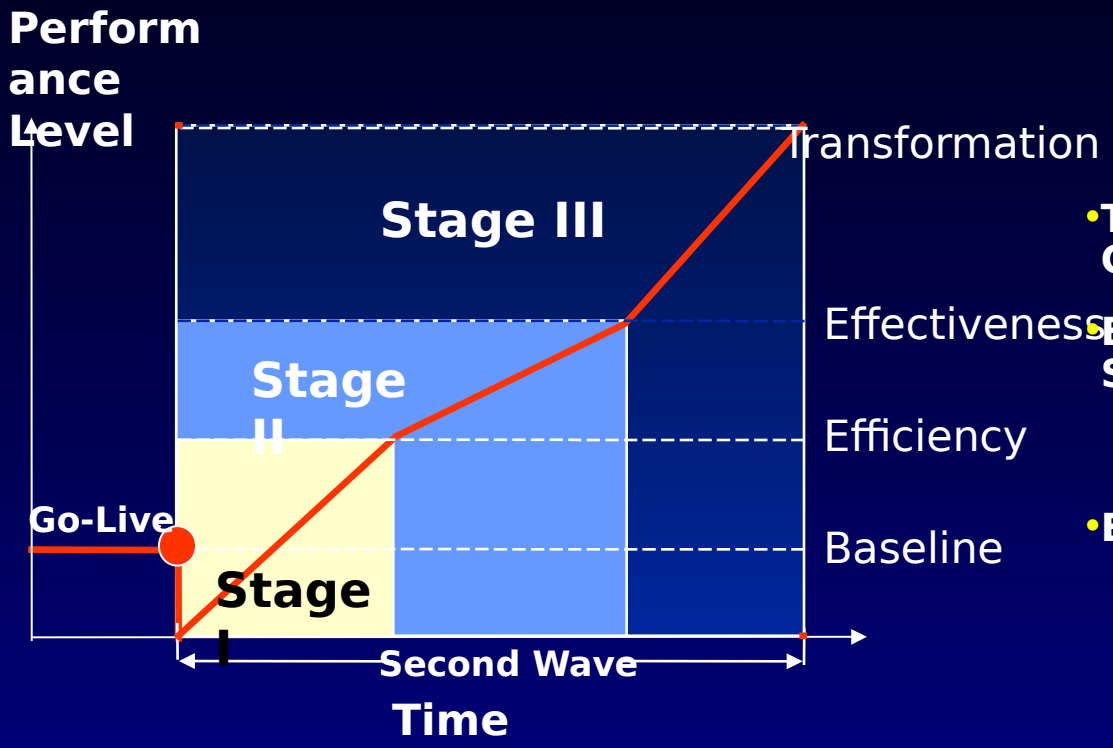
...By Our Customers

Why ERP?

- Maximize synergies within sector
  - Design anywhere/build anywhere
  - Implement shared services for transactional functions
- Growing sector while managing infrastructure growth
- Cutting edge best practices via COTS software
- Enterprise information vs. stovepipe systems

Stages: Performance

Stage III results in the maximum benefits from ERP investment through enterprise transformation



ESSS Examples

- **Transformation - e-Commerce**
- **Effectiveness - Shared Service**
  - Information Technology
- **Efficiency - 2 Way Match**
  - Drill Down
  - Elimination of Dual Entry (Time)

Deloitte Consulting

Key Enablers

- Executive sponsorship
- Customer partnering
- Consulting knowledge transfer
- Full time, collocated team
- Quick decision making process
- Communications and training

ES³ ERP Team

Project Teams

- DSD - Procurement / AP
  R. Bercier / B. Caster / B.
- Rental Equipment
  C. Schwartz / D. Fiackos
- E- Procurement
  M. DeBruyn / B. Miller
- Enterprise Information Warehouse
  M. Faringer / J. Collins
- Product Data Manager
  M. Fischer / R. Hosier
- Material & Manufacturing
  J. Carlson / T. Teixeira
- Material / MRP
  J. McFarland / J. Allan
- Manufacturing Execution I
  R. Beverley / R. Morano
- Finance
  D. Kusnierz / R. Linde
- Program Management
  S. Gedeik / B. Niggemyer
- Payables Phase I
  N. Boggs / R. Linde
- DSD - Finance
  R. Bercier / C. Peer / D.
- Finance Phase 2
  B. Evans / R. Linde

Versions 8/9/00

Project Sponsors

J. Roche / T. Shelman

Project Executives

SAP - L. Leukhardt / PDM - J. Pitts
IIS - D. Timmer

Project Controls

- Internal Audit
  C. McCoy
- IIS Business Management
  G. Haynes
- Program Planning & Control
  L. Schaum
- Procurement
  D. McClure

Production Support

- MES
  I. Flecksteiner / R.
- HR
  M. Riall / E. Hooper
- QA
  I. Flecksteiner / T.
- Procurement
  P. Bythrow / B.
- Plant Maintenance
  P. Bythrow / D. Fox
- Fin/Cont/Ship/PS/AM/CA TS
  W. Brooksbank / M. Riley

Steering Committee

W. Smith / J. Pitts
J. Messmore / R. Bahner
R. Spiker / R. Baez
J. Cassady

Project Integration

- Systems / Process Architecture
  G. Sicklick
- Architecture Planning
  G. Votta / L. Befano / G. Miller
- Methodology & Processes
  J. Strauss
- Technical Infrastructure/ Software Quality
  S. Greenspan
- Cultural Transition
  L. Abbey / J. Strauss / T. Brennan
- Communications
  T. Quirk
- SAP Security
  J. Simpson
- Integration & Test
  J. Fattaleh

Customers

DCMA and DCAA
Functional Organization
end users

SAP Sample Project Team Structure

BLUE TEAM

- L. Leukhardt
- D. Timmer
- T. Bile'
- R. Suski
- V. Obringer
- B. Gore
- B. Savage
- K. Rand

EXECUTIVE SPONSOR

R. Bahner

PROGRAM MANAGEMENT

J. Carlson | T. Teixeira

IT
Bus. Partner
Software Engr
Contractor

DCMA and DCAA
unctional Organization
end users

PROJECT MANAGEMENT

J. McFarland | J. Allan

S/W ENGRG MGRS

P. Bythrow/J. Flecksteiner

INVENTORY/WM/ PURCHASING/QM

J.Justis | Marler, Bowen, Hepner

MFG/MAT'LS VISIBILITY

C. Eybs | Allan/Kordula

MRP/MATL MASTER/BOM

T. Wells | G. Schade

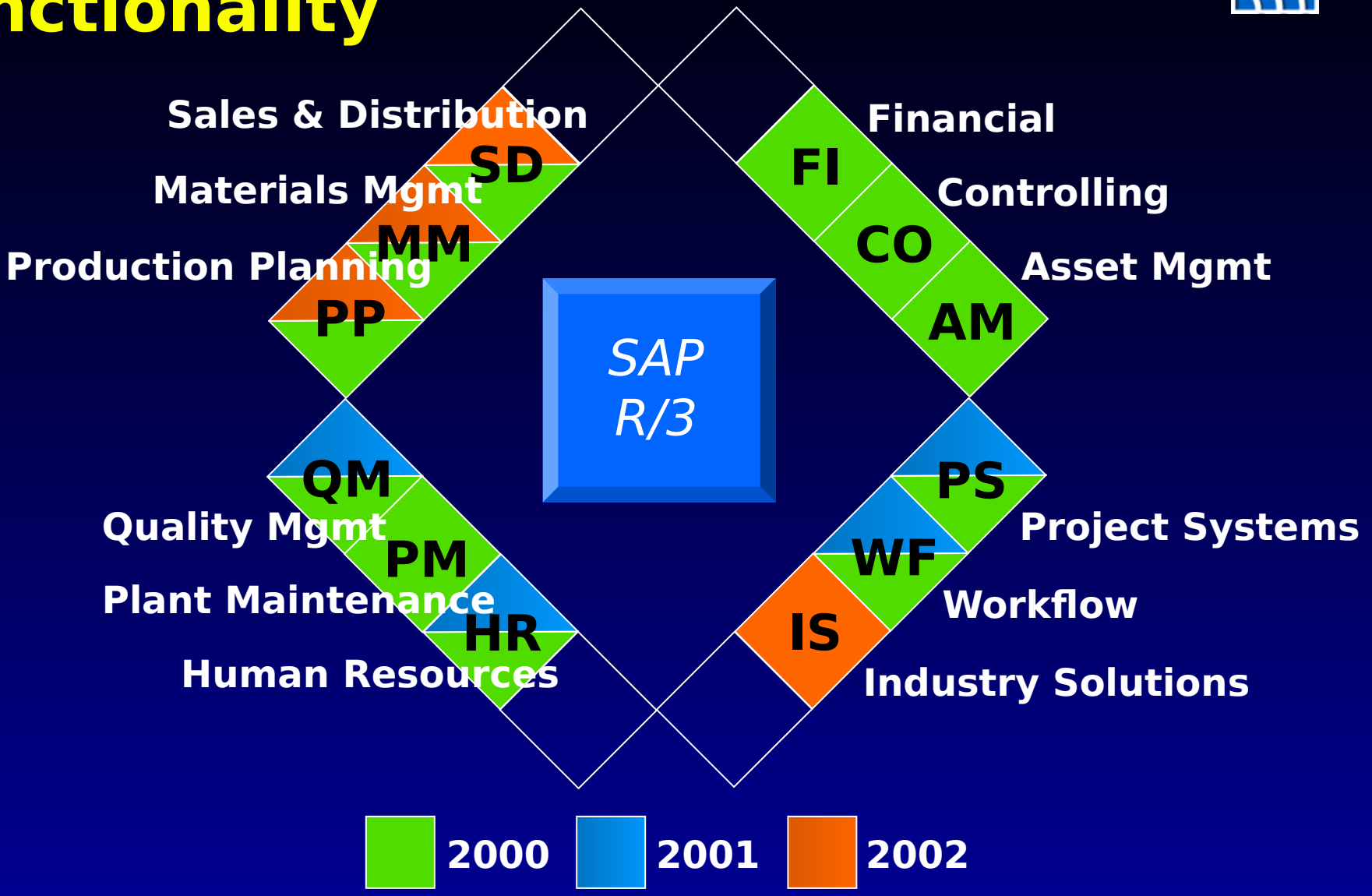
SAP PROJ SYSTEMS INTEGRATION SUPPORT

S.Gedeik | B.Niggemyer

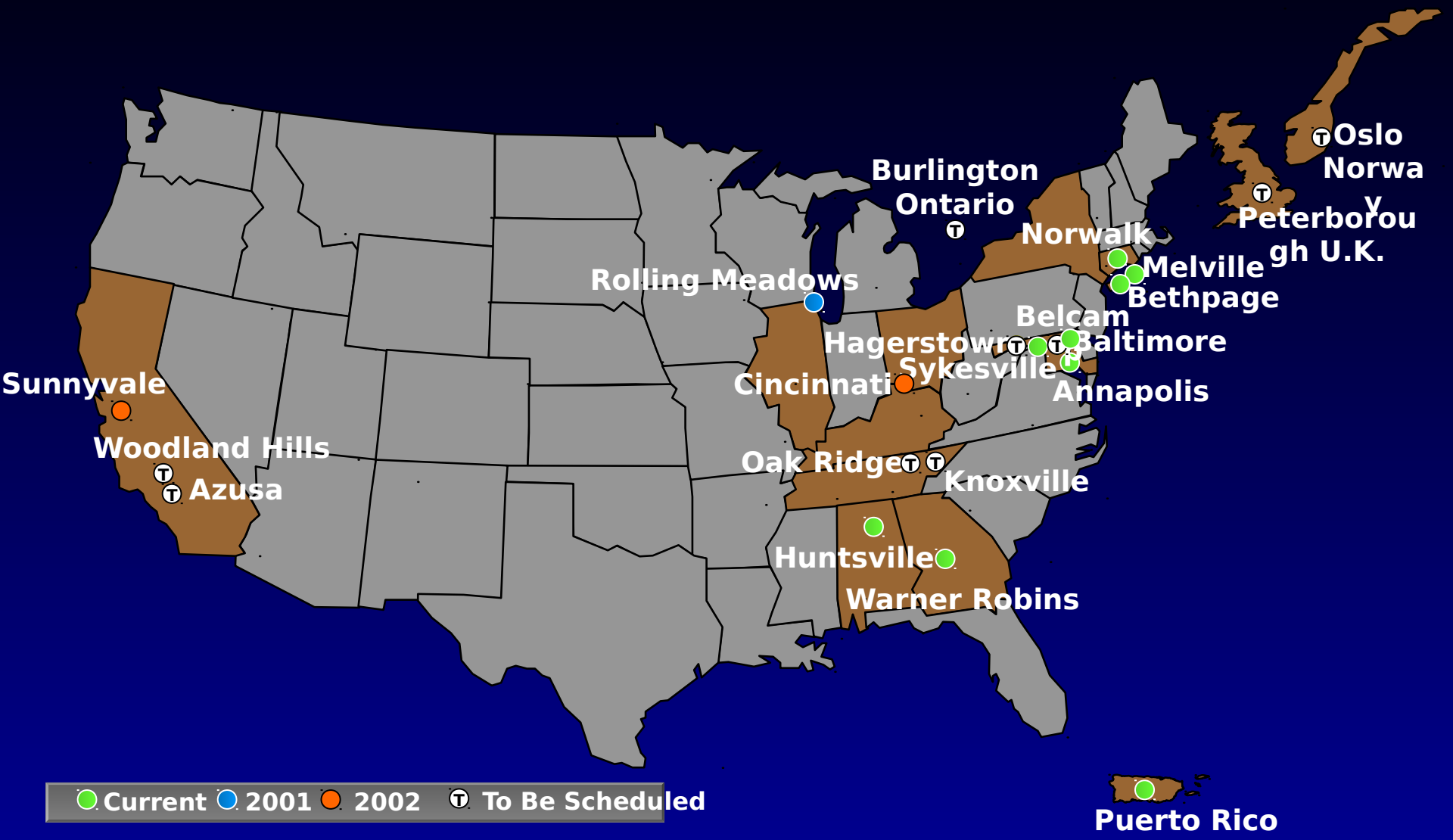
SAP FINANCIAL SYS INTEGRATION SUPPORT

M. Riley

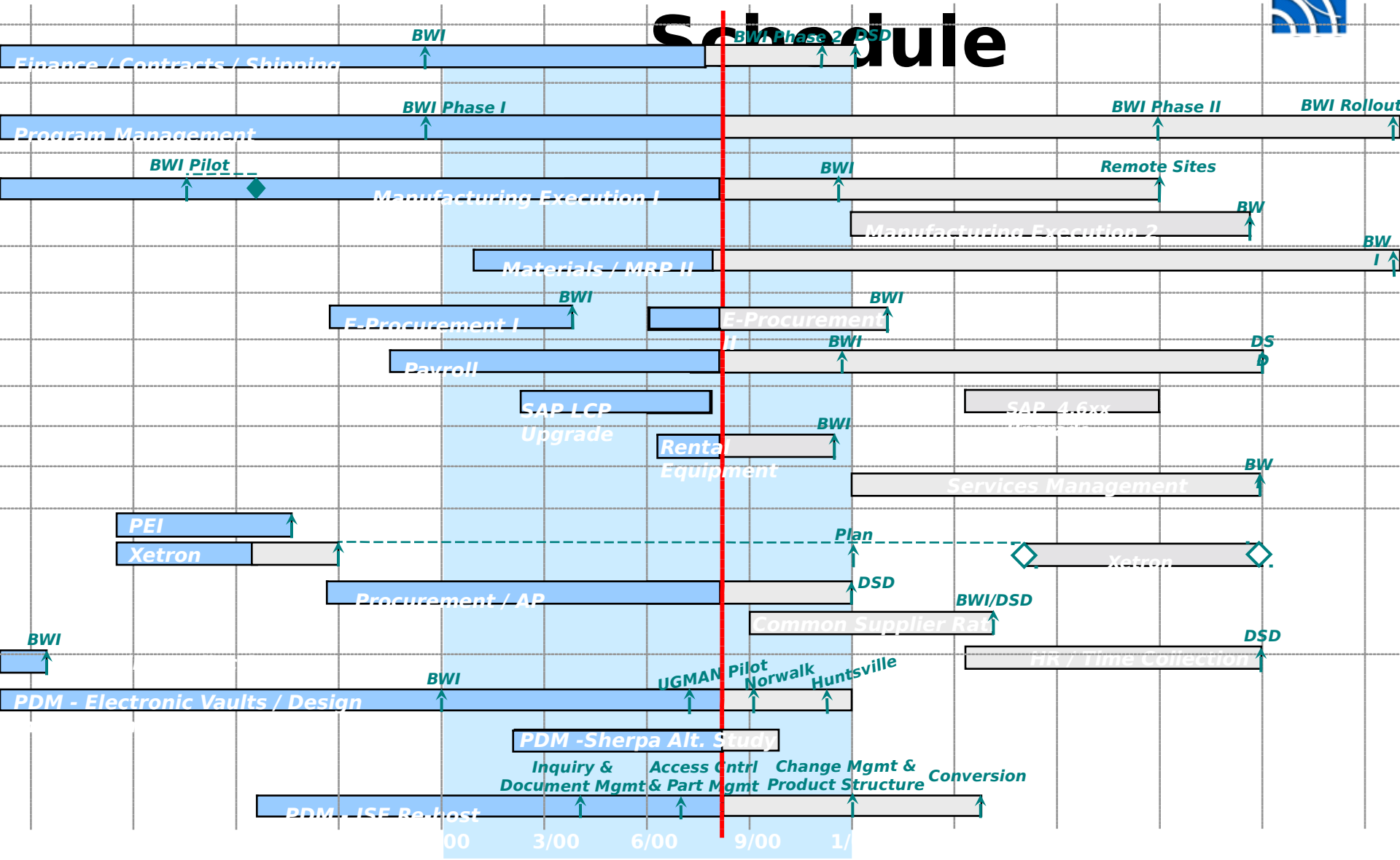
ES³ SAP Phased Rollout of Functionality



SAP Finance Implementation Schedule . . .



ES³ ERP Master Schedule



Methodology

- Employed consultants for proven methodology
- SEI approved methods
  - Sector
  - Corporate
  - External

Audits done annually

SEI Level 3 Achieved with ERP Implementation

The Building Blocks

Project Plan

Requirements Document

Design Document

The Building Blocks

- Project Plan
  - Roles/Responsibilities
  - Process/Methodology
  - Project Management
  - Defect Review Strategy
  - Statement of Work
  - Risk Plan and Tracking Method
  - Configuration Management
  - Subcontract Management
  - Inter-group coordination plan
  - Test Strategy
  - Training

The Building Blocks

Requirements Document
- List of Requirements
- Traceable Approach

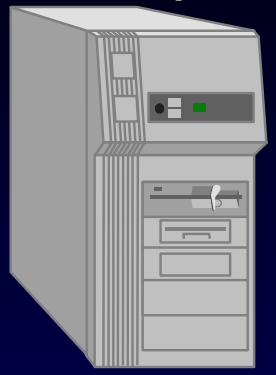
Defining Requirement
Writing Specification
Coding Software
Testing
Moving to Production

Design Document

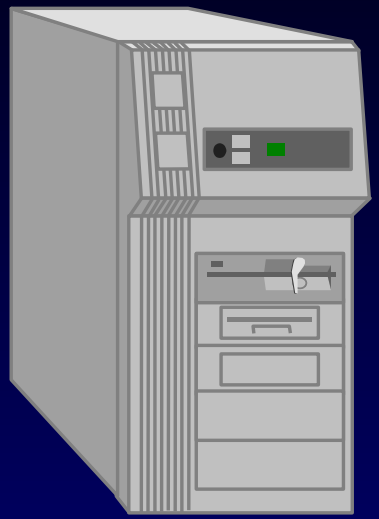
Technically Oriented

Hardware

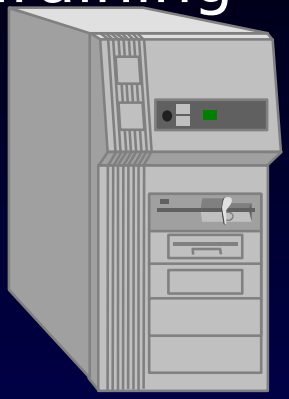
Development



Staging

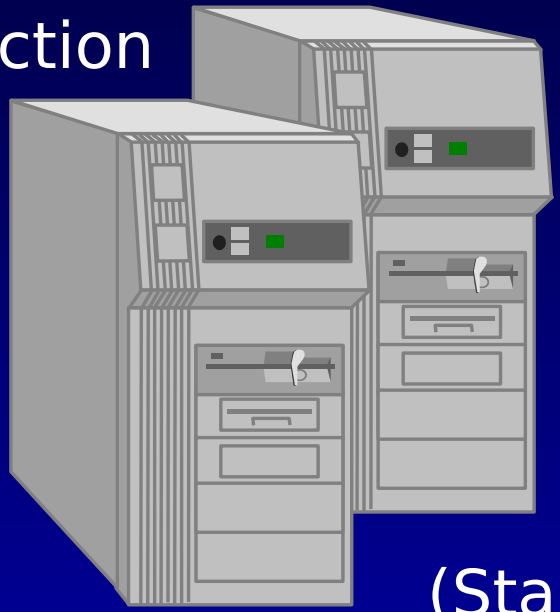


Training



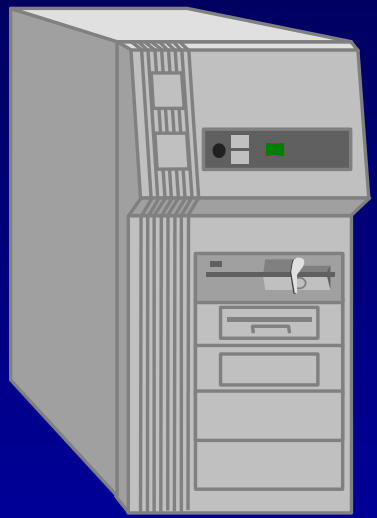
Production
Fail over

Production



(Staging)

Production
Copy

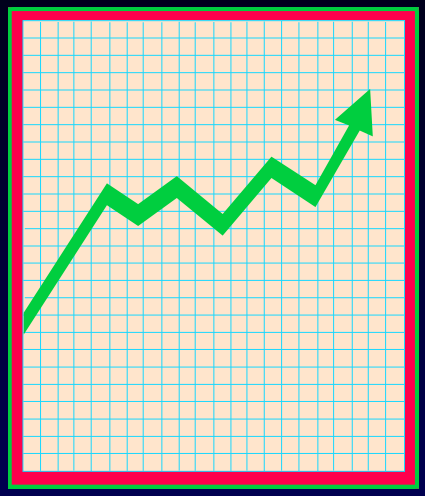


Customer Partnership

Early and often communications

at executive and working levels

Internal Oversight



- Executive Communications
  - Sponsor Meetings
  - Blue Team Reviews
  - Executive Steering Committee
  - Weekly/Monthly Program Reviews
  - Internal Audit
  - Quarterly Corporate Reviews
- Review Tools
  - Weekly Earned Value
  - Project Schedules
  - Team Metrics
    - Specification Development
    - Coding
    - Testing

Cultural Change Management

. . .

- Formalizing process
- Educating sponsors/project managers
- Incorporating lessons learned

- Keys are:
  - Communication during design, test, conversion and Go Live
  - Continuing training after go live
  - Help Desk Support
  - Power Users

. . . Risk Management Process

Sample Implementation Process

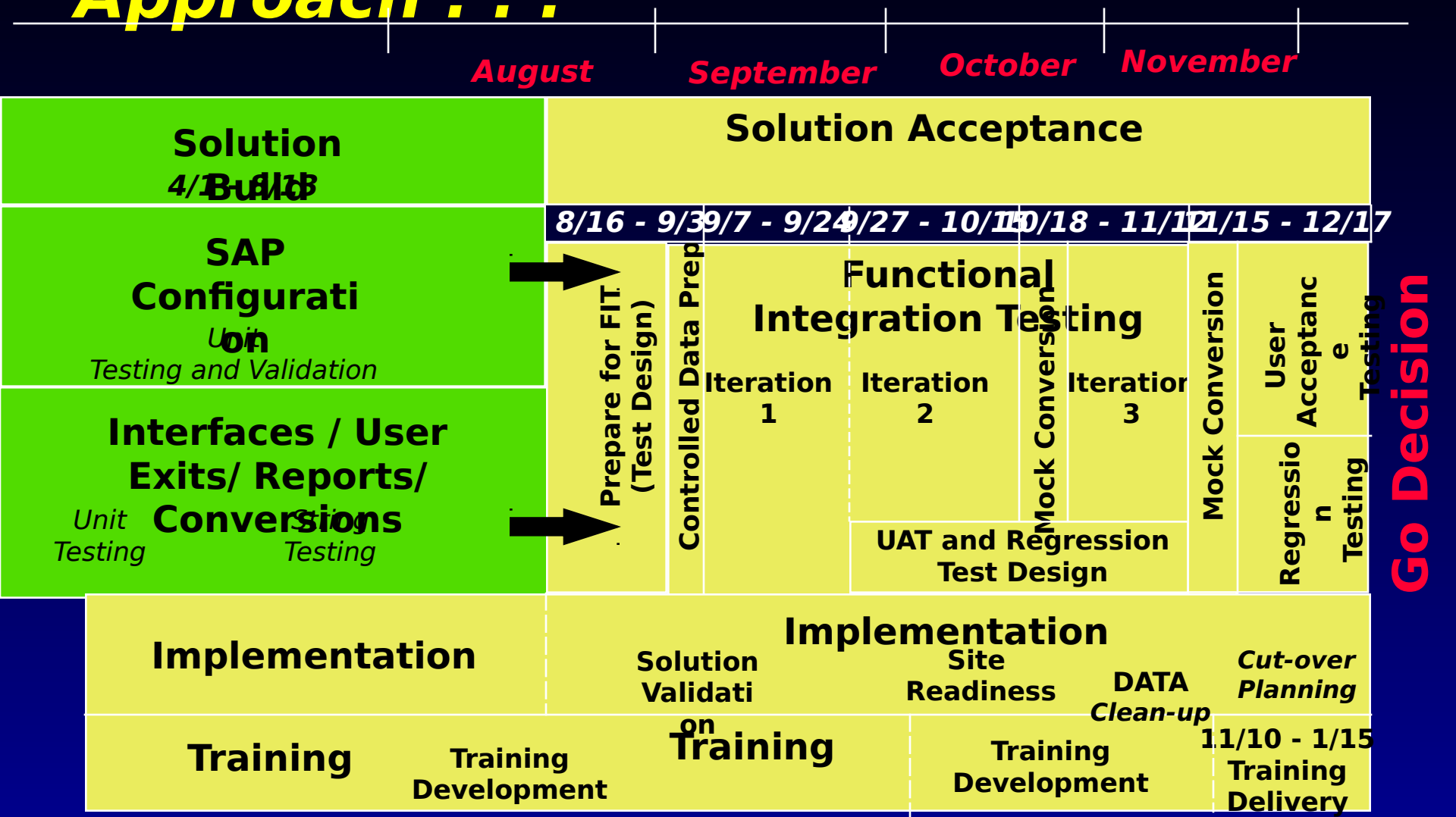
- Functionality implemented 1/1/00
  - SD Module
    - Contracts
    - Shipping
    - Billing
  - CO Module
    - Cost Collection
      - Budgets
      - Projects (Customer/Non-Customer)
  - PS Module for Project Structures
  - FI Module
    - Functional and legal financial reporting
    - Accounts Payable

ES³ Accounting Shared Services

Account		Home Office					Remaining Offsite Locations
	BWI	Oceanic	Norden	DSD	Marine	Xetron	
Non System Driven							
Travel & Entertainment						TBS	TBS
System Driven							
Labor Payroll Process						TBS	TBS
Procurement Process / A/P							TBS
Sales and Distribution							
Account Receivable							TBS
Invoicing							TBS
*Asset Management							TBS
General Acct./Consol.							

Current 2001 2002 To Be Scheduled

Solution Acceptance Approach . . .



Test Scenarios

- Testing Scope
  - All business processes
  - Customer award to contract close out
  - Security
  - Interfaces
- Scripting Content
  - Prerequisite requirements
  - Business process reference
  - Expected results
  - Actual results
  - Pass/Fail
- Incident resolution

Conversion

- Data Clean up
- Conversion strategies
- Mock Conversions
- Cut Over Plan
  - Dependencies and sequences
  - Contingency plans
  - Validation documentation
- Reconciliation documentation

Customer Partnership

Early and often communications

at executive and working levels

Teamwork Activities

- Bi-monthly executive meetings
  - ERP status and round table discussions

- Bi-weekly working team meetings
  - Design progress
  - Process Changes (disclosure statements)
  - System demos by module
  - FIT progress and incident resolution
  - Cut over activities
  - Training
  - Stablization coordination

Training and Access

Customers participated in same training as work force

- Design Concepts
- Display training courses
- Hands on labs

Customer access

- Paperless or paper-light work flow
- Integration of processes (inspection)

Lessons Learned

Key success requirements:

- **Executive sponsorship**
- **Customer partnering**
- **Expectation management-cultural change management**
- **Visibility requirements**

Summary

- ESSS chose a phased implementation approach
- Established organization and oversight process
- Compliant SEI Methodology
- Customer partnering critical to success!!